MAPS

Market Opportunities for Transfer to Personal Computers

INPUT®

MARKET OPPORTUNITIES FOR
TRANSFER TO PERSONAL COMPUTERS

JULY 1984

MARKET OPPORTUNITIES FOR TRANSFER TO PERSONAL COMPUTERS

ABSTRACT

This report explores vendor opportunities for transferring existing mainframe/mini software to personal computers. Critical issues addressed include trends in the distribution of functionality between mainframe/mini and PC software, identification of the most attractive market segments for this transfer, and discussion of key success factors for vendors adopting the transfer approach.

This report contains 56 pages, including 11 exhibits.

MARKET OPPORTUNITIES FOR TRANSFER TO PERSONAL COMPUTERS

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M-CAT-135

MARKET OPPORTUNITIES FOR TRANSFER
TO PERSONAL COMPUTERS

EXHIBITS

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I INTRODUCTION

- This study was produced by INPUT as part of the 1984 Market Analysis and Planning Service (MAPS) for the information services industry.

- This area of research was selected because of high client interest and INPUT's belief that this topic is particularly crucial to traditional software vendors of mainframe/mini software products and services as well as to integrated systems and processing vendors.

- INPUT's objective is to analyze current market and vendor activities in order to identify key issues and trends that require vendor action. Specific recommendations are included in this report to provide vendors with a framework for further analysis and investigation.

- This study examines several strategic issues.

    - Is there a market for the transfer of existing mainframe/mini software to personal computers (PCs)?

    - What are the most attractive market segments for application transfer?

    - How will vendors distribute functions between mainframe/mini software and the PC?

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- What will be the key success factors for micro products vendors?

- INPUT has forecasted that PC software will represent nearly 14% of the total software market by 1988 and 23% of the applications software segment by 1988.

- PC software is the fastest growing segment of the software market.

A.   SCOPE

- The personal computer is defined as a computer system that sells for under $15,000 for the complete unit. At the minimum, a system will include a central processing unit of no less than 16K but more frequently at least 48K of ram, a keyboard and cathode ray monitor, and dual floppy disk drives.

- The focus of this report is on business software, excluding the home market.

- Vendor analysis is focused upon the activities of mainframe/mini software product companies.

    - Trends and product marketing strategies established by these vendors will provide benchmarks for other information services vendors wishing to participate in the transfer of existing mainframe/mini software products to personal computers.

    - The exact strategies emphasized by other information services vendors will depend upon what they now sell, how they intend to grow, and the products/services they can add to their repertories.

    - Of the total $7.7 billion spent on software in 1983, 80% of the total was derived from vendors whose primary line of business was the development and marketing of software products.

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B.   METHODOLOGY

- In addition to considering program research, INPUT conducted ten telephone interviews with traditional mainframe/mini software product vendors having annual revenues greater than $20 million. These interviews were intended to determine their extent of vendor participation in the transfer of existing software products to the PC.

- Additional vendor plans and activities were obtained from a review of trade press literature and previous INPUT research.

- User requirements and plans were incorporated in this study from extensive research undertaken by INPUT for the information systems program.

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II   EXECUTIVE SUMMARY

- This executive summary is designed in a presentation format in order to:

    - Help the busy reader quickly review key findings and recommendations.

    - Provide a ready-to-go executive briefing, complete with script.

- The key points of the entire report are summarized in Exhibits II-I through II-4.

- On each left-hand page facing an exhibit is a script explaining contents.

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A. CURRENT MARKET TRENDS

- Allocation of information systems (IS) department resources to develop and maintain corporate mainframe systems has created an enormous backlog of new application requests from end-user departments.

  - End users are attempting to fill the gap with the purchase of personal computer (PC) hardware and software.

  - Demand is being stimulated by unprecedented expenditures on multi-media advertising using consumer marketing strategies to foster a belief that the buyers can control their own destiny.

- Corporate buyers are being courted by many sources for the same product.

  - These sources include Telemarketeers, hardware manufacturers, vendor sales forces, software distributors, value-added resellers, national account teams, processing services vendors, and software product vendors.

  - In addition, retail specialty stores such as Businessland are now catering to the corporate buyer.

- Vendor claims for productivity software have made it hard to differentiate products.

  - Easy-to-use integrated spreadsheets, graphics, and word processing, and powerful relational data base capabilities, are examples of such product claims.

  - Lotus 1-2-3 has become the recognized leader in this market, making it difficult for new competitors to succeed.

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EXHIBIT II-1

CURRENT MARKET TRENDS

- **User Dissatisfaction Is Stimulated by Multi-media Advertising**

- **Multiple Distribution Channels Are Confusing to Both Buyer and Seller**

- **Cross-industry Productivity Software is Becoming Difficult to Differentiate**

- **Lotus 1-2-3 is the Star of Productivity Software**

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B.   MARKET OPPORTUNITIES FOR APPLICATION TRANSFER

- Current market opportunities for the transfer of mainframe software to PCs are categorized as either mainframe to PC links or standalone versions of mainframe software.

- Vendors plan to repackage mainframe links as distributed application systems that will incorporate downloading of mainframe functionality to the PC.

  - One specific example is an integrated financial system that offloads mainframe data entry, editing and validating accounting data to the PC, using mainframe-compatible screens and the PCs processing capability.

  - Standalone accounting modules on PCs will utilize mainframe accounting software for month-end consolidations of multibusiness unit companies. Information will be transmitted in turn to the corporate mainframe for roll-up purposes.

- Demand for downloading corporate data to PCs will result in the emergence of personal information centers, which will become extensions to mainframe information centers.

  - Applications software on the PC will be required for decision support.

  - Natural language retrieval and data base management systems for extraction and selection from mainframe data bases and application systems will be required for report generation.

- A combination of distributed application systems and personal information centers will require a hierarchy in software connectivity between the end user with both personal and departmental data bases and mainframe-based corporate data bases. The first phase will be implemented with mainframe bidirectional links to local area networks through multiplexors.

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EXHIBIT II-2

MARKET OPPORTUNITIES FOR APPLICATION TRANSFER

- **Distributed Application Systems**
  - **Download Functionality from Mainframe to PC**
  - **Integrated Corporate Financial Systems**
  - **Utilize Mainframe Software for Consolidations**

- **Personal Information Centers**
  - **Extensions to Mainframe Information Center**
  - **Decision Support for Planning and Analysis**
  - **Report Generation Integrated with Word Processing**

- **Hierarchy in Connectivity between End Users and Corporate Data Bases**
  - **Personal**
  - **Departmental**
  - **Divisional**

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C.   KEY SUCCESS FACTORS

- Vendors interviewed for this study were asked to describe key factors critical to their successful marketing of applications transferred to PCs.

- Vendors believe that downloading data or software programs to PCs is a utility function that has no real business value. Success depends on identifying end-user business needs and integrating them to the mainframe application. Many vendors announced that links to mainframes were based upon requirements from information systems departments to convert PC users to mainframe terminals.

- Software vendors must provide end users with the path of least resistance to their mainframe software products.

    - Most PC functionality focuses on user interfaces to mainframe software.

    - Data entry and retrieval are most visible to end users.

- Information center managers of mainframe software must manage PC technology rather than have technology manage them.

- The ability to leverage existing "favorable" relationships with vendors' customer base will assist in vendor differentiation. Many mainframe vendors have learned how to successfully market to the information systems department--at the expense of getting close to end users' business problems.

- Every vendor interviewed is targeting Fortune 1300 companies as a primary focus. Despite the high cost of a direct sales force, vendors believe that multiple copy sales of their products can be realized only to the divisions, subsidiaries, and groups of the Fortune 1300, but most vendors have not yet dealt with the need for special pricing.

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EXHIBIT II-3

KEY SUCCESS FACTORS

- **Providing Solutions to "Real" Business Problems**

- **Distribution of Functionality to PC**

- **Management of PC Technology**

- **Leverage Existing Customer Base**

- **Targeting Multilocation Companies**

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D.   RECOMMENDATIONS

- Mainframe software application systems will evolve to distributed application systems that incorporate PCs as the remote processor.

    - First-phase implementation should be the distribution of front-end to mainframe systems.

    - Initial PC functionality should focus on mainframe data capture/valida-tion, formatting, and retrieval for traditional accounting functions; eventually it should evolve to distributed processing. Using Lotus-like capabilities to manipulate mainframe information for local use can decrease the backlog in the information center.

- System software products such as DBMS and "fourth-generation" development systems should be repackaged for end-user consumption. Vendors must position themselves directly with end-user departments, and they must create and maintain easy-to-use and easy-to-understand documentation.

- Cross-industry application vendors should align themselves with industry-specific vendors, so each will complement rather than compete with the other.

    - Establish joint ventures to gain product, people, and distribution networks with industry leaders.

    - Allow access to private-label products. This will increase overall market potential and increase credibility in the target industry.

- IBM sets and maintains industry standards. The company plans to sell more than two million PCs in 1984. All those PCs and the IBM look-alikes will grow up one day to be distributed "mainframes." Get on the bandwagon!

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EXHIBIT II-4

RECOMMENDATIONS

- **Establish Distributed Application Strategy**

- **Package Software Technology as a Solution -- Not a Tool -- to Business Problems**

- **Get Closer to End-user Departments**

- **Establish Joint Development/Marketing Ventures with Targeted Industry Leaders**

- **Permit Industry Leaders to See Private-label Application Solutions, to Establish Industry Credibility**

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III   VENDOR ANALYSIS

- This chapter examines mainframe software product vendors' activities to capitalize upon the rapidly growing installed base of personal computers within their current customer base and targeted markets.

A.   INTRODUCTION

- Software product companies represented approximately $4.3 billion in revenue in 1982, or 80% of user expenditures.

    - Processing services vendors had $685 million in software product revenues.

    - Professional services vendors had $363 million in software product revenues.

    - Integrated systems vendors had $98 million in software product revenues.

- During 1982, 1,879 vendors participated in the mainframe/mini software market as their primary line of business. In the aggregate, these primary vendors have developed and marketed over 4,000 tested and proven software products, a large percentage of which can potentially be leveraged by personal computer users.

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- INPUT categorizes vendor software products into two groups:

  - Systems products.

  - Application-specific products.

B.   SYSTEMS PRODUCTS

- INPUT defines systems products as software that enables the computer/com-munications system to perform basic functions. They consist of three types of products:

  - Systems control products, such as operating systems and communica-tion monitors.

  - Data center management products, offering utilities, job accounting, and performance measurement.

  - Application development products, including compilers, DBMS, data dictionaries, and report writers.

- Systems software products are targeted primarily to the technically oriented user.

  - Application development products such as IDMS, IMS, and ADABAS are batch processing oriented for very large data bases and often require additional COBOL programming to meet application needs.

  - In recent years they have been enhanced to include interactive front-ends for the nontechnician, normally referred to as the end user.

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- End-user-oriented application development products, such as Information Builder's FOCUS and Mathematica's RAMIS II, are often used in the information center due to their ease of use. Current enhancements to this type of product often position them as "fourth-generation" application development products.

- Systems software vendors interviewed for this study claim that current PC technology does not provide the operating systems environment required for their software.

  - The IBM XT/370 running VM was cited as the only exception. However, IBM was not planning to make any announcements of a standalone version.

  - Vendors' primary strategy is to connect the PCs to their mainframe software via 3270 emulation to download data. The IBM announcement of a 3270 PC supports vendors' overall strategy, which is to use the PC to load up the mainframe, thereby increasing demand for both the small and large systems.

  - Vendors of systems software, primarily DMBS and natural language retrieval systems, are attempting to position themselves as the "gateway" to mainframe data bases and files in order to satisfy the rapidly increasing need of users and information systems (IS) management to access corporate data.

C.   APPLICATION-SPECIFIC PRODUCT VENDORS

- Vendors of application-specific products have also determined that the hardware and operating system limitations of PCs are major obstacles to conver-

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sion. These vendors have decided to provide micro-mainframe links to their mainframe application systems to distribute specific functionality to the micro.

- For the vendors interviewed in this study, initial functionality means data capture and its associated editing and validation functions.

    - Additional functionality will emerge as an integrated component of mainframe-based distributed application systems.

    - Local area networks and multi user departmental systems will establish a hierarchy of connectivity among dispersed users and processors.

- Corporate data formats and conventions will be standardized by IS departments, but specific distributed application segments will be customized by providing user-defined screen menus and processing options that will be provided by vendor software "shells." In some cases, IS departments are totally dictating the end-user environment.

- MSA has introduced the executive Peachpak to link remote users of Peachtree accounting software to MSA's mainframe accounting products.

    - MSA expects Peachpak to provide an application solution to the business problem of month-end consolidations for companies with "distributed," autonomous operations.

    - In addition, users will be able to select specific data fields from MSA mainframe accounting products to download data formatted on the mainframe to be compatible with leading micro software productivity packages such as Lotus-1-2-3, and with MSA's Peachtree line of micro software.

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- Walker Interactive has developed mainframe/mini financial systems based upon technology that has recently been popularized by products such as Ashton-Tate's Framework and Lotus's symphony.

  - Walker has recently transferred its financial systems to run under Data General mini and micro systems using proprietary software bridge technology.

  - A major element of Walker's application transfer strategy is their belief that users will want to determine their own need for functionality on the PC and thus must be provided with individual views of mainframe-based applications software.

- American Management Systems sells mainframe application systems for $200,000-$500,000.

  - AMS therefore cannot justify PC users' software expenditures of 100 times the cost of hardware.

  - AMS plans to provide PC users with a software link to emulate 3270 communications to their mainframe application systems.

- The trend of having multiple operating systems on a single system has recently gained momentum and is expected to continue.

  - UNIX in conjunction with MS DOS and VM will become more prevalent.

  - IBM will probably introduce a proprietary operating system of its own for the PC within the next 12 months but will make sure it can co-exist with MS DOS.

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D.   DECISION SUPPORT VENDORS

- Vendors of productivity tools--namely, decision support systems--are among the first wave of software vendors to offer standalone versions of their main-frame software on PCs.   These DSS vendors and their software products include:

  - Execucom--IFPS/Personal.

  - Via Computer--Micro/PROPHIT.

  - Applied Data Research--Empire.

  - Evaluation Planning Systems--Micro FCS.

  - Boeing Computer Services--EIS.

- PC versions from all surveyed vendors have been rewritten to increase ease of use. The most frequently mentioned new feature was the use of screen menus to improve user friendliness.

- Mainframe features not available on the PC fall into two categories:

  - Features requiring mainframe MIPS power for processing large arrays in analytical applications such as Monte Carlo simulations.

  - Systems or application development features that are not designed for non-DP professionals.   These include file management and operating system macros.

- DSS vendors have provided optional mainframe-PC links to permit end users to transfer data and models in order to utilize the power of the mainframe.

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- INPUT believes DSS vendors are in for a rude awakening.

  - PC users have been exposed to a new breed of software products that are integrated and interactive. Lotus 1-2-3 has established a new "standard" for interactive software, both on the PC and eventually for the mainframe as well.

  - Personal information centers will emerge, providing word processing, modeling (spreadsheet style), graphics, and an umbilical cord to the mother mainframe.

  - Lotus "4-5-6," better known as Symphony, has begun to recognize the interdependence between PCs and mainframe/minis as well as the importance of word processing as the wedge into office automation.

- It is important for all vendors targeting the PC market to realize that the market segment they are pursuing is the same but different.

  - Specific end users have organizational clout and leverage that the IS managers only dream about. The vendor has to be aware that the tides of end-user fortunes vary depending on how well they have done recently; they can sometimes lose their influence very quickly.

  - PC software technology has sparked a revolution in information processing that will deliver the promise of distributed data processing.

D.   MOTIVATIONS FOR APPLICATION TRANSFER

- Vendors interviewed are motivated to transfer mainframe software technology to PC users via bidirectional data transfer and error-checking

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communication links to satisfy demands from their current customers and to increase the sale of existing mainframe software, as shown in Exhibit III-1. Competition from micro software vendors is of concern only to vendors of single-user productivity products such as financial planning, graphics, and text editors.

- The 10 vendors in INPUT's sample comprise 20% of the 1983 Adapso software product companies having annual sales over $10 million. Every vendor interviewed has announced or plans to announce a PC-mainframe link as an initial offering.

- Vendor accommodation to the PC for data transfer is an interim strategy.

- Sixty-five percent of vendors in INPUT's sample are preparing an aggressive assault upon two fronts:

  - Acquisition of micro software products and companies that complement their current mainframe market strategy.

  - Integration of micro software products into mainframe applications beyond data transfer.

F. PROBLEMS ENCOUNTERED BY VENDORS

- Exhibit III-2 verifies that respondents who have sold micro software stand-alone versions of their mainframe software indicated their biggest problem is establishing product differentiation and their associated benefits to non-DP end users.

  - Product features retained on the mainframe because of required "MIP" power are discounted by PC users as not worth the incremental cost for their applications.

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EXHIBIT III-1

PRIMARY REASONS FOR TRANSFER OF
MAINFRAME SOFTWARE OR LINK TO PERSONAL COMPUTER

- **Expectations of Existing Mainframe Customers**

- **Increase Sales of Mainframe Software**

- **Leverage Installed Customer Base**

- **Competition from Micro Software Publishers**

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EXHIBIT III-2

MOST DIFFICULT PROBLEMS IN SELLING PC SOFTWARE

- Product Differentiation from Mainframe

- Presenting Benefits to Non-DP Users

- Establishing Business Reasons for Mainframe Link

VENDOR RESPONSE TO PROBLEMS

- Provide Education and Training of Sales and Support Representatives

- Provide Education Seminars for End Users

- One leading DSS vendor went as far as providing a quadram expansion memory board as part of its offering in order to overcome buyer resistance to using its PC standalone version.

- Vendors of micro-mainframe links have had to justify to IS management the differences between their significantly higher price offering versus buying IRMA boards for PCs and having IS management provide their own generalized links to mainframe software rather than having software specific links provided by mainframe software vendors.

  - Vendor response to typical IS management's "not invented here" objections is to present the benefits of full-service, single-source accountability and ease of use.

  - In fact, the receptivity of IS management to outside assistance in this arena is very high.

- Respondents of systems software mainframe products found that their direct sales force was having problems presenting benefits to end users.

  - Mainframe salespeople are comfortable talking about MIPS, MVS, VSAM, product features--the language of the IS department, rather than the language of business benefits.

  - One vendor decided it could not afford the time and money to retrain its mainframe sales force, so they have begun hiring processing services salespeople who are well trained in the art of consultative selling and end-user hand holding. Other vendors are re-educating their sales organizations to better communicate with the end user.

- Pricing was a major concern for all vendors interviewed, regardless of product type (standalone or link).

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- Many vendors indicated they have lowered or plan to lower their price in response to buyer resistance and competitive alternatives.

- One bold vendor believes that future pricing strategies will raise the price of software above the cost of hardware. Another vendor even advertised that they would give away the hardware if the buyer purchased specified software.

- Infonet currently offers a financial consolidation micro software product for $25,000 plus installation.

- One of the tactics used to overcome the end-user sales problems has been to establish seminars for the end user presented by industry (not computer) experts at the level of understanding of the audience.

- Multiple channels of product distribution have confused both buyers and sellers.

  - Multiple telemarketing groups have targeted Fortune 1300 companies-- from vendors and distributors to retailers.

  - Software marketers are seeking distribution agreements with PC hardware manufacturers, as well as with traditional information services vendors. Examples are:

    . Informatics General and VisiCorp with VisiAnswer.

    . Lotus Development Corp. with McCormack Dodge and others.

    . Infonet and Ashton-Tate's BASE II.

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- Computer Associates International and Micro Data Base Systems.

- Planning Research Corporation and Microventures Realtor Products.

- National account sales teams contribute to friction between dealers or distributors and microcomputer publishers.

  - This friction is due to competition between the two factions for sales to major corporations.

  - A recent indication is that the software publishers will use their direct sales force to sell multiuser versions of their products-- such as Ashton-Tate's multiuser BASE II.

- MSA has established a separate division to court the Fortune 1300 companies with a complete catalog of discounted micro software products.

  - MSA initially set the annual commitment level to $100,000 in order for a company to qualify for corporate discounts and full-service support.

  - It is believed that MSA will lower the commitment level to $5,000 due to prospective objections to the figure set initially.

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IV MARKET OPPORTUNITIES

- This chapter describes current and future market opportunities for the transfer of existing mainframe/mini software products to PCs.

- Without exception, every vendor interviewed for this report targets the Fortune 1300 companies as their primary commercial focus for mainframe/mini software product line(s).

A. SOFTWARE MARKET SEGMENTATION

1. MAINFRAME SOFTWARE

- Total user expenditures for software in 1983 were $7.7 billion. They are expected to grow to $30.7 billion by 1988, representing an average annual growth rate (AAGR) of 32%.

    - Four vendors interviewed claim their revenues from mainframe/mini software products exceed 40% of total revenues per year.

    - Revenues from PC-oriented products are expected to contribute between 20%-50% of total software revenues within three years.

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- As shown in Exhibit IV-I, vendors of systems software had a 46% market share.

    - INPUT forecasts this share will decrease to 41% by 1988 as end-user demand for application solutions outstrip the supply of systems programmers using traditional mainframe application development methodologies.

    - The growth of fourth-generation language implementation and end-user access to mainframe information will permit application development at the user level, thereby helping to reduce the applications backlog.

- Industry-specific software product expenditures are expected to surpass those of cross-industry software products by 1988, capturing a 32% share of user expenditures for software.

- INPUT believes the market for cross-industry applications software within the Fortune 1300 companies will require vendors to differentiate their product lines by adding industry-specific functionality to their "generalized" packages wherever practical, in order to effectively compete with the onslaught of new vertical industry software products.

2.   PERSONAL COMPUTER SOFTWARE

- Total user expenditures for PC software in 1983 was $530 million and is expected to grow to $4.2 billion by 1988, yielding AAGR of 51%.

- Vendors of cross-industry micro software captured 21% of the market in 1983, as shown in Exhibit IV-2, and will expand their share to 38% by 1988.

- Industry-specific micro software product vendors had only a 5% share of market in 1983, but their market share will more than double by 1988, as shown in Exhibit IV-3.
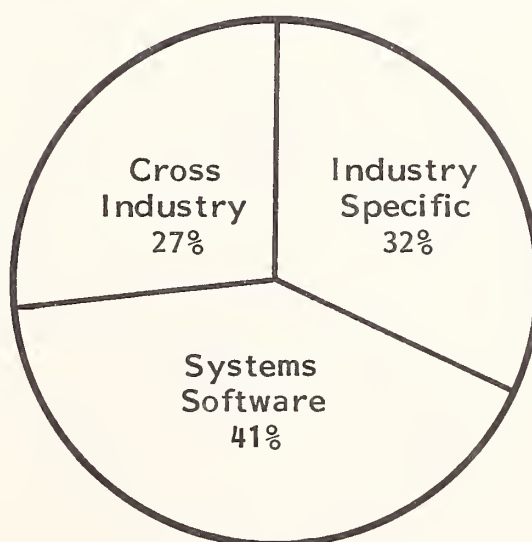
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EXHIBIT IV-1

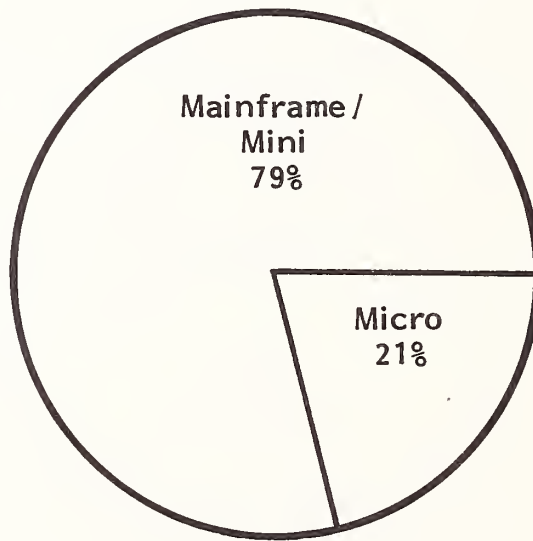## U.S. SOFTWARE MARKET SHARE BY PRODUCT CATEGORY
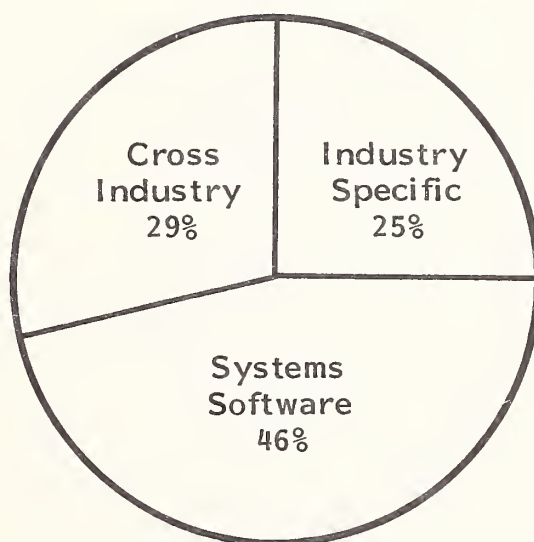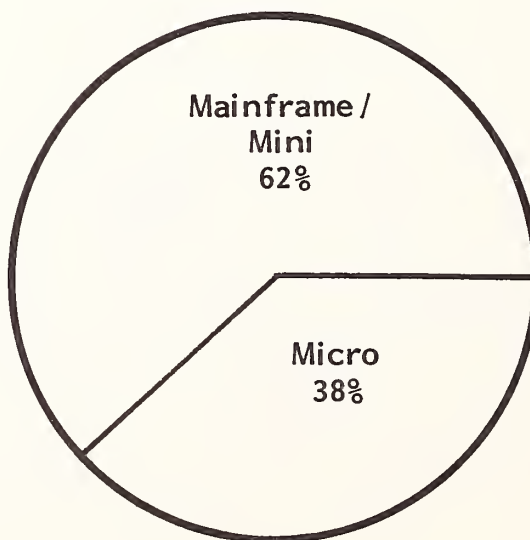
1983
Total Software Market
$7,700 Million

1988
Total Software Market
$30,690 Million

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EXHIBIT IV-2

MICROCOMPUTER MARKET SHARE OF
CROSS-INDUSTRY APPLICATIONS SOFTWARE

Mainframe/
Mini
79%

Micro
21%

1983
$2,220 Million

Mainframe/
Mini
62%

Micro
38%

1988
$8,280 Million

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EXHIBIT IV-3

MICROCOMPUTER MARKET SHARE
OF INDUSTRY-SPECIFIC APPLICATIONS SOFTWARE

Mainframe/Mini
95%

Micro ⟶ 5%

1983
$1,940 Million

Mainframe/Mini
89%

Micro
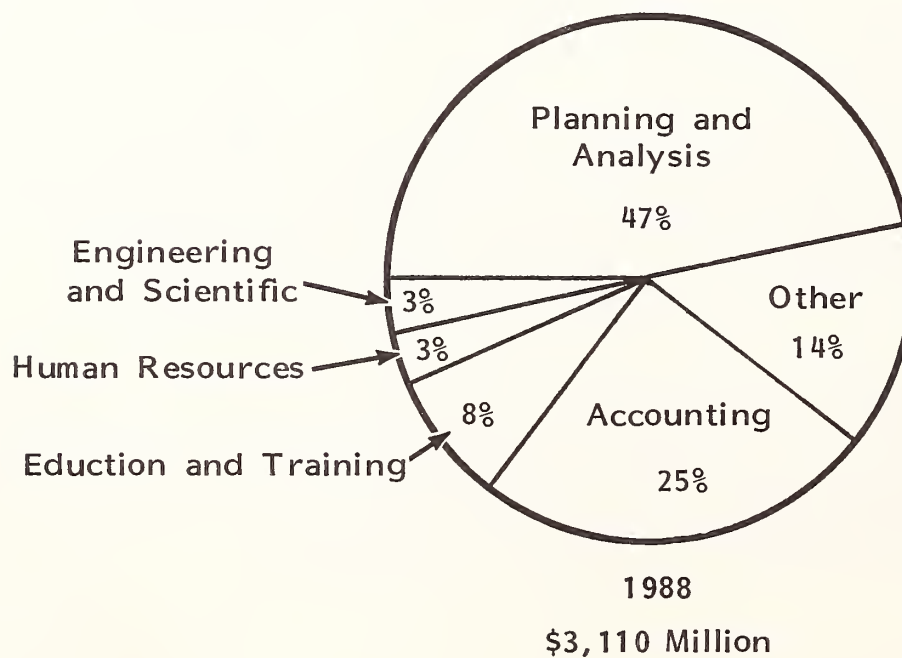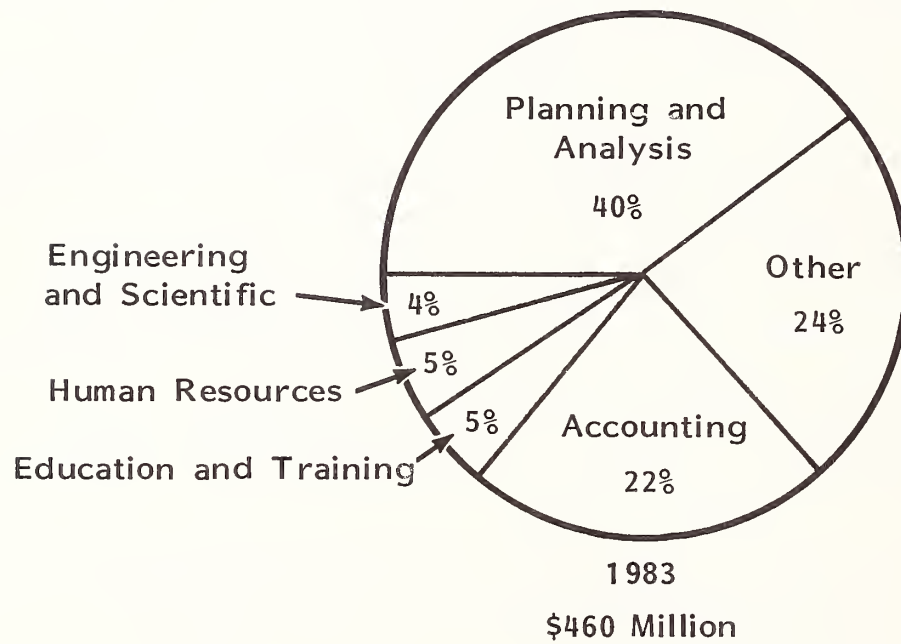11%

1988
$9,930 Million

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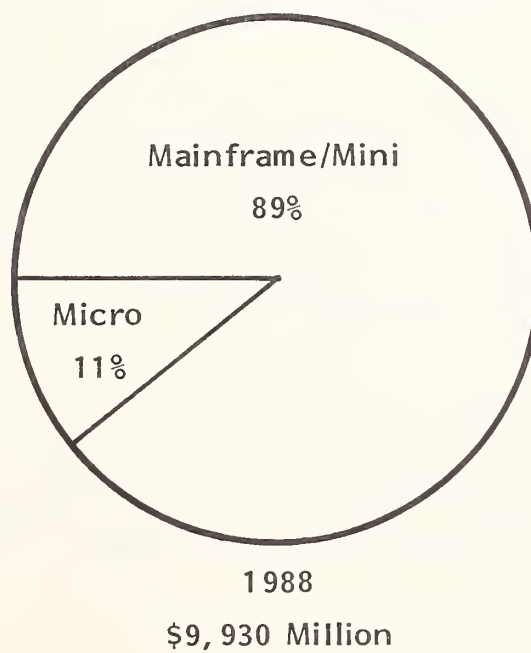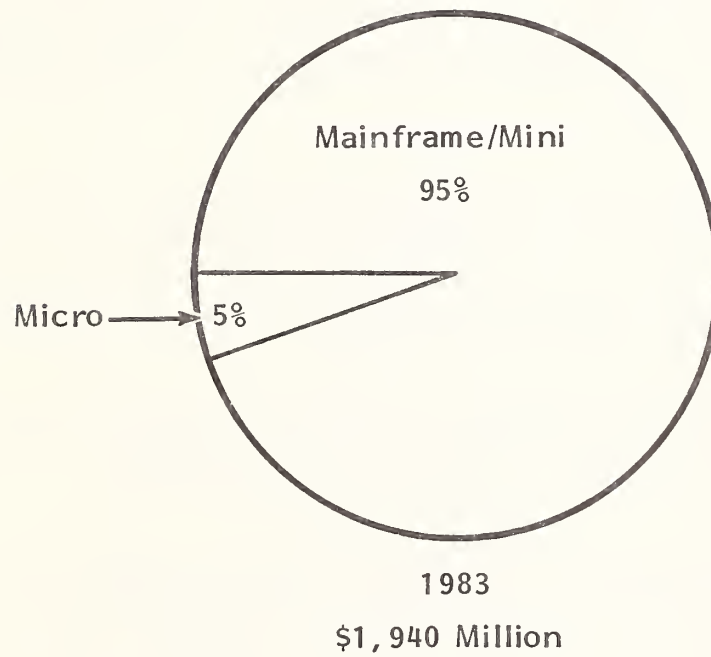
B.   DISTRIBUTED APPLICATION SYSTEMS

- Many vendors of mainframe software believe the greatest opportunity emerging from the proliferation of PCs will be for true distributed data processing.

- The distributed data processing market is driven not by vendor claims but by the needs of office-PC users, and by the recognition that it is much cheaper to buy hardware and software than it is to hire people and rent or buy additional space.

    - The widespread replacement of standalone word processors and typewriters with PCs will provide local processing power on desktops throughout Fortune 1300 companies.

    - Micropro, manufacturer of WordStar, has sold over 1.5 million copies since 1978 and over 700,000 copies in FY1983.

- It has been estimated that between two and three million word processors have been sold since 1964. By the end of 1984 as many PCs will have been installed, providing an alternative to traditional word processors, as the number of word processors ever sold!

- It has become quite clear that IBM is positioning the IBM PC and its brothers and sisters (XT, JR, 370, 3270) as the dominant office workstations to be linked to distributed file servers, LANs, minis, and mainframes, depending on user requirements and IBM's need to provide "compatibility" with IBM-installed hardware and software systems.

    - IBM's recently announced word-processing software for the PC will provide a migration path for users of the Displaywriter, the 5520 administrative system, and the System/23 Datamaster.

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- IBM also intends to support document interchange architecture on the PC and 3270 PC, thus connecting the two machines to the distributed office support system software running on 4300 and VM/370 mainframes.

- Vendors are aggressively analyzing the most effective distribution of functionality between PCs and their mainframe/mini software in order to establish product development and/or acquisition priorities.

  - The quiet revolution within Fortune 1300 offices to replace typewriters and word processors with PCs will fuel this demand to distribute processing and application systems to the office.

  - Initially, software--both mainframe and PC--will be integrated and re-packaged as distributed application extensions to existing application systems.

  - Standalone accounting packages on PCs will be integrated with mainframe accounting software for month-end corporate consolidations of multibusiness units.

  - PC summary data for financial planning and analysis will be a major by-product of integration.

  - Accounts receivable systems on mainframes will be integrated with distributed billing systems that are customized for local business operations by modifying "standard" mainframe screen menus.

- As part of end-user research conducted in 1983, INPUT believes the pie chart shown in Exhibit IV-4 supports the notion that the two most attractive (defined) application markets for micro software, comprising 62% of all user expenditures, are planning and analysis and accounting.

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EXHIBIT IV-4

MICROCOMPUTER CROSS-INDUSTRY SOFTWARE MARKET
BY APPLICATION TYPE

Planning and
Analysis

40%

Engineering
and Scientific → 4%

Human Resources → 5%

Education and Training → 5%

Other
24%

Accounting
22%

1983

$460 Million

Planning and
Analysis

47%

Engineering
and Scientific → 3%

Human Resources → 3%

Eduction and Training → 8%

Other
14%
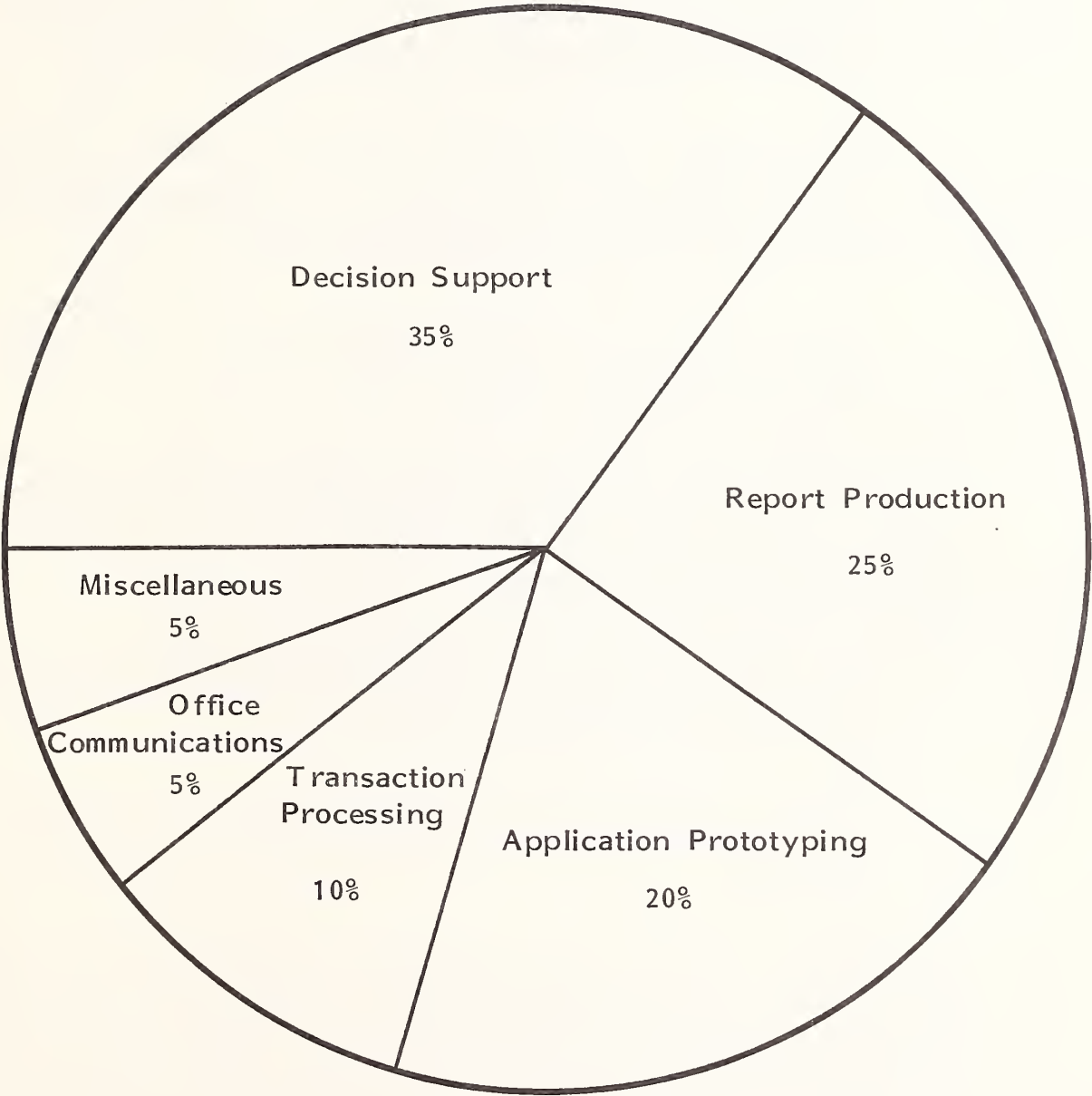
Accounting
25%

1988

$3,110 Million

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C.   PERSONAL INFORMATION CENTERS

- Ask users how easy or difficult it was for them to extract data from existing corporate systems to use for an analysis program on their IBM PCs, and they'll show you the batch production "summary" report for their division.

  - The summary report is used in rekeying the information in order to have "interactive" access to "local" data.

  - The applications development backlog has now been compounded with a backlog of requests from PC users to retrieve data from different corporate mainframe(s) data bases and/or files, such as DL/I, Total, VSAM, IDMS, etc., to download to their PCs for planning and analysis.

- This demand for access to corporate data has motivated software product vendors to announce links to their mainframe products via a 3270 terminal or a PC emulating a 3270 terminal.

- Innovative vendors such as Informatics General went one step further and entered into an agreement with VisiCorp to market VisiAnswer, which is a combination of Informatic's Answer/DB mainframe product and VisiCorp's VisiCalc.

  - The personal information center, as described by Informatics, permits users to specify and retrieve mainframe data fields with cursor movements on their PCs.

  - To use the information extracted from the mainframe, the user creates a VisiCalc file that can then be loaded into existing VisiCalc models or used with any other VisiSeries products from VisiCorp.

INPUT

- The personal information center, however, is in reality an extension of mainframe application systems. Users unfamiliar with these applications must decipher data field names devised by the systems software people in the information center.

- The mainframe information center was created by IBM in the late 1970s, well before the introduction of the IBM PC, to address the needs of the so-called "knowledge worker."

  - As shown in Exhibit IV-5, 60% of the applications used in the information center are for decision support (planning and analysis) and for report generation (data base inquiry and information retrieval).

  - Not surprisingly, 46% of information center users are from finance departments.

    . Twenty-three percent are from administration.

    . Fifteen percen are from marketing.

    . Thirteen percent are from information systems.

    . Three percent are from operations.

- It is not within the scope of this study to analyze the success or failure of the information center but to suggest that the distribution of applications and departmental usage of information centers closely parallel user needs and identifies which corporate departments are most attractive candidates for PC software links and standalone products.

- INPUT believes that an immediate opportunity exists for all vendors of mainframe-based data base management and natural language retrieval systems to provide a link to the growing installed base of PCs.

INPUT

EXHIBIT IV-5

TYPICAL INFORMATION CENTER APPLICATIONS

Decision Support
35%

Report Production
25%

Miscellaneous
5%

Office
Communications
5%

Transaction
Processing
10%

Application Prototyping
20%

INPUT
MCAT

- Any discussion of market opportunities for software would be incomplete without a projection of installed IBM PCs.

  - According to entry systems division president Don Estridge, IBM is now shipping a PC every 16 seconds and expects the frequency to increase by the end of 1984, to one every seven seconds.

  - IBM president John Akers has stated that IBM plans to produce three times as many PCs during 1984 as were shipped in 1982, which translates to more than two million PCs for 1984.

  - Sales estimates for IBM-compatibles indicate that another 500,000 units will be shipped in 1984.

- In addition to being the largest, most profitable, strongest marketing organization in the information processing industry, IBM is also the largest vendor of systems and application software.

  - According to IBM, the area of systems and application software is growing at a rate of 42% per year.

  - Software represents 6% of total IBM revenues, or more than $2 billion per year.

- Most industry watchers believe the IBM PC, PC/XT, XT/370, 3270/PC, and PC/IX are part of an integrated product line strategy that will emerge as the hardware solution for the office of the future. IBM's recent announcement regarding LAN implementation suggests that the token ring LAN methodology will become the standard.

  - IBM has repeatedly stated tht it is in the business of manufacturing and marketing hardware and considers itself the low-cost provider.

INPUT

- By setting and maintaining hardware "standards," IBM has, de facto, set software architecture standards.

- Independent software vendors that target the Fortune 1300 companies will be well advised to evaluate PC market opportunities within the context of imagining that what is best for IBM will be best for them. The content can be summed up, "If you can't fight 'em, join 'em!"

- INPUT believes that currently the market within the Fortune 1300 companies is large enough to support information services vendors that adjust to the market's needs.

  - In addition, however, INPUT believes that a large market exists for industry-specific, well-packaged, niche-directed products in a wide range of smaller organizations.

  - Vendors need to evaluate their strengths and plans in conjunction with the overall sales potential--not just the potential existing within the major U.S. corporations.

INPUT

V   CONCLUSIONS AND RECOMMENDATIONS

A.   CONCLUSIONS

- Each of the mainframe/mini software product companies interviewed for this study has announced or plans to announce a new product based upon the vendor's mainframe/mini software. Product announcement fall into two product categories:

    - Mainframe-PC links.

    - Standalone versions of the vendor's mainframe software.

- Vendors of cross-industry applications software, primarily decision support systems, have opted to rewrite their software.

    - Software incorporates PC technology to improve ease of use and provide a higher degree of interactivity between user and machine.

    - Compatibility with the mainframe version was provided at the data and command level for model building in order to allow PC users to easily transfer models requiring greater MIPS power to the mainframe or for consolidation of individual models into divisional or corporate ones.

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INPUT

- It appears that one significant trend that is unfolding with the transfer of mainframe software to PCs is the introduction of true distributed data processing (DDP).

    - During the late 1970s, many hardware vendors used DDP as a strategy to sell more "iron" to remote locations of Fortune 1300 companies.

    - It is becoming clear that the major force behind the rebirth of DDP will be the PC and communication links to corporate data via local area networks or directly to corporate mainframes.

- Systems software respondents have announced or plan to announce a bidirectional software connection from the mainframe to the PC to download data files and from the PC to the mainframe to upload operational (sometimes transactional) data.

    - Vendors within this category often cited the portability of their software (in a matter of days, to the IBM XT/370 running under the VM operating system) as a contingency strategy to provide a standalone version of their mainframe software on a PC. This is an offering they honestly believe will not be required.

    - Systems software vendors interviewed provide multiuser software; and therefore, they strongly believe that today's single-user PCs do not provide a significant market opportunity short of having more terminals to hang on to the mainframe via a link.

    - Vendor participation in the standalone PC software market is via acquisition or development of new software.

    - The majority of vendors interviewed perceive the standalone PC software market as a "consumer" business which is a different business from selling $100,000 mainframe software. The fact that MSA is

INPUT

reducing its micro software threshold for corporations to $5,000 is an indication that the consumer perspective must cross over into the corporate selling area.

- It is too early to forecast the success or failure of vendors that transfer their mainframe software to PCs, but the trend appears to be that vendors are enjoying rapid growth of traditional business and are providing links to their software as an initial accommodation to their existing customer base rather than as an aggressive thrust into new markets.

    - The exception to this forecast is the vendors of DSS products.

    - Micro software products such as Lotus 1-2-3 and Microsoft's Multiplan have been establishing new "standards" of price-performance and ease of use for all mainframe software vendors.

B.   RECOMMENDATIONS

- A vendor should try to determine whether an application transfer to a PC will be successful.

    - INPUT recommends that each vendor initiate a systematic evaluation of its existing mainframe product portfolio to identify functionality to download to PCs or rewrite as a standalone version.

    - Current vendor trends to provide PC users with a link to mainframe software will not be a profitable, long-term strategy, since competitors will begin to differentiate their "links" as distributed application systems.

INPUT

- As products are identified, they should be evaluated on the basis of target market characteristics. These may include:

    - Customer dissatisfaction with competitive offerings.

    - Buyer price sensitivity and behavior.

    - Customer needs and wants.

    - Competitor's strengths and weaknesses.

C. KEYS TO VENDOR SUCCESS

- Vendors interviewed for this study are among the largest software product companies in the information services industry. They believe that providing solutions to existing business problems is the number one contributor to vendor success.

- INPUT believes that technology-driven information services vendors must implement the "marketing concept." The marketing concept dictates that senior management will start its company on the road to profitability by first identifying customer needs (real business problems) and developing products and services to satisfy those needs.

- Marketing superiority will emerge as the most important key to vendor success.

- The recent best-seller by Peters and Waterman, In Search of Excellence, extols the virtues of "staying close to your customer." Its management study assumes that customers are both willing and able to clearly state what they want or need.

INPUT

- Mainframe software vendors often find that information systems departments articulate business needs that are quite different from what end users require.

- Vendors must clearly identify who their actual customers are before "getting close."

- Vendors should not confuse the requirements of selling to the end-user marketing with selling" bits and bytes" to technically-oriented buyers.

● Investigation of new product failures in the information services industry by INPUT reveals an overreliance on internal identification of new product requirements. Vendors must make sure they know what the user wants instead of "guessing" what the market is.

● Vendors that have announced or plan to announce standalone versions of their mainframe software indicate their success will be based on "business-as-usual" factors.

- INPUT recommends that these vendors review their pricing, marketing, and customer support strategies and strongly suggests that the marketing and support costs for micro software are significantly different from their traditional mainframe markets.

- The costs for micro software support, maintenance, and training can and should be priced for profit and sold to the user.

● One of the most critical issues surrounding the transfer of mainframe software to microcomputers is the quantum reduction in price.

- Vendors of mainframe software that sells for $50,000 or more are offering microsoftware versions of the same software at a retail price

INPUT

of between $1,500 and $2,000. Discounting and OEM deals often provide vendors with an actual revenue contribution that can be 50% of the retail price.

- The typical defense of mainframe software pricing is that the cost is shared or spread across a large base of end users, thus effectively reducing the unit price per user.

- A major fallacy of this pricing approach in the micro market is that users may not require (and are therefore unwilling to pay for) all of the functionality provided in mainframe software.

- Experience dictates that most end users learn and therefore use only 20-30% of the features available in a software product.

- Therefore, mainframe software users pay for functionality they do not require, but they are willing to subsidize the corporate systems software specialists.

- INPUT recommends that software product vendors begin to move away from offering confusing menu price lists and begin to package software according to targeted business problems.

  - End users do not buy technology; only IS departments do! But end users must believe they are buying the most current technology (even if they can't tell the difference).

  - Vendors of software links must begin to download functionality and not just data fields. Today's link should be tomorrow's distributed application system!

- Vendors of cross-industry applications software should seek out joint development and marketing agreements with Fortune 1300 customers who can provide

INPUT

brand identification and credibility to vendor software products as well as industry expertise in developing priorities of industry needs and application benefits.

- Senior managers with Fortune 1300 companies are quickly recognizing the need to evaluate their companies' role in the economic reality of the information industry's growth potential.

- Certain industries and industry segments are becoming information services providers as part of their core businesses. Examples of such industries are:

    . Financial institutions.

    . Book and newspaper publishers.

    . Real estate agents.

    . State and local governments.

- In all cases, vendors that intend to sell PC-oriented software, (whether it is standalone, linked to a mainframe, application specific, or cross industry) have to create and maintain easy-to-read and easy-to-follow documentation geared toward those who are not computer experts. This documentation, in turn, has to be supported by experts at the end of a telephone line who can quickly and easily respond to questions the end user will have.

- Without question, information services vendors can benefit by the revolution underway throughout corporate America as well as agencies of the federal government if they react to the new opportunities with products, pricing and personnel that can support users' needs.

INPUT

APPENDIX A: RELATED REPORTS

- <u>Seventeenth Annual Survey of the Computer Services Industry</u>, August 1983.

- <u>U.S. Information Services Markets, 1983-1988 Volume I: Industry-Specific Markets</u>, December 1983.

- <u>U.S. Information Services Markets, 1983-1988 Volume II: Cross-Industry Markets</u>, December 1983.

INPUT

1. Has your company announced a micro version of your mainframe/mini software product(s)? ☐ Yes ☐ No

   If No, do you plan to announce a micro version or mainframe to PC link?
   ☐ Yes ☐ No

   If No, please indicate on a scale of 1 to 10 the reason for not releasing a micro version or link (1 – least important, 10 = most important).

   PC Hardware Limitations:
   ☐ Storage   ☐ Core Memory

   ☐ Internal Speed   ☐ Single User

   ☐ Other

   ☐ Financial (not profitable)

   ☐ Conversion Costs

   ☐ Does Not Fit with Our Target Market

   ☐ Lack In-House Technical Skills

   ☐ Product Is Too Sophisticated (Complex) for Non-DP End User

   ☐ Would Erode Sales of Mainframe Version

   ☐ Other

   If Yes, please go to question number 2.

2. Please indicate your primary reasons for releasing a micro version in priority order:

   ☐ Competition

   ☐ To Increase Sale of Mainframe Version

   ☐ To Leverage Installed Customer Base

   ☐ To Enter New Markets with Existing Product

   ☐ To Increase Market Awareness of Company

   ☐ To Participate in Micro Software Market Growth

   ☐ Expectation of Customer Base

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INPUT

3. What are the three most difficult problems you have encountered in selling your PC software?

1. _____

2. _____

3. _____

How have you responded to these problems?

1. _____

2. _____

3. _____

What is the name of your product?

Mainframe: _____

Micro: _____

What is the price of your product?

Mainframe Price: _____

Micro Price: _____

4. Was micro version rewritten or converted directly from mainframe version?

_____

_____

5. How many work-months were required for rewriting? _____

6. What were the major reasons for rewriting? (Check all that apply.)

☐ To Make It More User Friendly

☐ Too Large to Fit on Hardware

☐ To Make It Menu-Driven

☐ To Add New Features for New Market

☐ Other _____

INPUT

7. How compatible is the micro version with the mainframe version?

☐ 0% ☐ 25% ☐ 50% ☐ 75% ☐ 100%

8. What features were dropped in the micro version?

_____

_____

_____

Why? _____

_____

9. What features were added?

_____

_____

_____

Why? _____

_____

10. Is there a "link" between the mainframe and micro version? ☐ Yes ☐ No

What is its function? _____

_____

11. How do you support or plan to support the micro version?

☐ Hotline

☐ Documentation

☐ Dealers

12. How does your micro customer support differ from mainframe support?

_____

_____

INPUT

13. What are your annual mainframe sales? _____

    Micro installed base? _____

14. What do you believe is or will be the key success factors for your micro product's success?

    ☐ Unique Features

    ☐ Ease of Use

    ☐ Distribution Channels

    ☐ Company Experience and Reputation

    ☐ Integration with Mainframe Product

    ☐ Other _____

15. What is the target market for your micro version? _____

    _____

    _____

16. How do you distribute your software?

    ☐ Software Distributors

    ☐ Retail Chains

    ☐ Present Sales Force

    ☐ Specialized Sales Force

    ☐ OEMs What type of OEMs? _____

17. What percent of total software sales do you forecast for the micro version in:

    1984_____ 1985_____ 1986 _____

18. Would you like to add anything else that should be part of my research?

    _____

    _____

    _____

INPUT

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